

Claims

1. A communication method for communication between a first network unit inside a vehicle and a second network unit of a terrestrial mobile communication system, wherein said communication is directed via a satellite, **characterized** in
5 that the method comprises:
 - establishing the satellite connection when information transfer between the first network unit and the second network unit is required,
 - releasing the satellite connection when information transfer between the first network unit and the second network unit is not required,
 - 10 - emulating signalling of the second network unit for the first network unit during a released state of the satellite connection, and
 - emulating signalling of the first network unit for the second network unit during the released state of the satellite connection.
2. A communication method according to claim 1, **characterized** in that said
15 signalling is LAPD link and Abis signalling.
3. A communication method according to claim 1, **characterized** in that said emulating signalling of the second network unit comprises transferring state messages with the first network unit.
4. A communication method according to claim 1, **characterized** in that said
20 emulating signalling of the first network unit comprises transferring state messages with the second network unit.
5. A communication method according to claim 2, **characterized** in that during the on state of the satellite connection capacity is reserved dynamically for the Abis link, based on the data transfer requirement.
- 25 6. A communication method according to claim 1, **characterized** in that additional data according to Internet Protocol (IP) is transferred between the first network unit and Internet via the satellite, wherein the communication between the first network unit and the second network unit is prioritized higher in the satellite communication than the IP data transferred between the first network unit and the Inter-
30 net.

7. A communication method according to claim 5, **characterized** in that the data transferred between the first network unit and the second network unit is transferred as packet data according to Internet Protocol.
8. A communication method according to claim 1, wherein the vehicle is an aircraft, **characterized** in that the method comprises receiving flight status information from the avionics of the aircraft for controlling the first network unit.
9. A communication method according to claim 8, **characterized** in that said on the basis of the received flight status information communications between the first network unit and mobile stations inside the aircraft are barred while keeping mobile stations camped to the first network unit.
10. A communication method according to claim 8, **characterized** in that the flight status information comprises at least one of the following information: flight altitude, position and heading, doors open/closed, activate/deactivate mobile communications.
11. A communication method according to claim 1, **characterized** in that the method comprises steps for:
- receiving communication information on another satellite and another second network unit,
 - establishing communications between the first network unit and the other second network unit via the other satellite on the basis of the received communication information, and
 - releasing the communication between the first network unit and the second network unit via the satellite.
12. A communication method according to claim 1, **characterized** in that the information transfer is compliant with at least one of the following communication specifications: GSM, PCN, PCS, HSCSD, GPRS, EDGE, CDMA, WCDMA, Bluetooth, UMTS, Teldesic, Iridium, Inmarsat and WLAN.
13. A communication method according to claim 1, **characterized** in that a wireless connection between the mobile terminal and the first network device is established by a wireless network inside the vehicle.

14. A communication arrangement comprising a first network unit for wireless communication with mobile stations inside a vehicle and a fixed second network unit of a terrestrial mobile communication system, the system comprising means for communicating between the first network unit and the second network unit via a satellite, **characterized** in that the arrangement further comprises

- means for establishing the satellite connection when information transfer between the first network unit and the second network unit is required,

- means for releasing the satellite connection when information transfer between the first network unit and the second network unit is not required,

10 - means for emulating signalling of the second network unit for the first network unit during a released state of the satellite connection, and

- means for emulating signalling of the first network unit for the second network unit during the released state of the satellite connection.

15. A communication arrangement according to claim 14, **characterized** in that said signalling is LAPD link and Abis signalling.

16. A communication arrangement according to claim 14, **characterized** in that said means emulating signalling of the second network unit comprises means for transferring state messages with the first network unit.

17. A communication arrangement according to claim 14, **characterized** in that said means for emulating signalling of the base station comprises means for transferring state messages with the base station controller.

18. A communication arrangement according to claim 15, **characterized** in said means for emulating are arranged to reserve capacity during the on state of the satellite connection dynamically for the Abis link, based on the data transfer requirement.

19. A communication arrangement according to claim 14, **characterized** in that it comprises means for transferring additional data according to Internet Protocol (IP) the first network unit and Internet via the satellite, wherein the communication between the first network unit and the second network unit is prioritized higher in the satellite communication than the IP data transferred between the first network unit and the Internet.

20. A communication arrangement according to claim 19, **characterized** in that it comprises means for transferring data between the first network unit and the second network unit as packet data according to Internet Protocol.
21. A communication arrangement according to claim 12, **characterized** in that the vehicle is an aircraft.
22. A communication arrangement according to claim 21, **characterized** in that it comprises means for receiving flight status information from the aircraft for controlling the first network unit.
23. A communication arrangement according to claim 22, **characterized** in that the arrangement comprises means for barring communications between the first network unit and mobile stations inside the aircraft on the basis of the received flight status information, and means for keeping the mobile stations camped to the first network unit during the barred state.
24. A communication arrangement according to claim 22, **characterized** in that the flight status information comprises at least one of the following information: flight altitude, position and heading, doors open/closed, activate/deactivate mobile communications.
25. A communication arrangement according to claim 14, **characterized** in that the arrangement comprises:
- means for receiving communication information on another satellite and another second network unit,
 - means for establishing communications between the first network unit and the other second network unit via the other satellite on the basis of the received communication information, and
 - means for releasing the communication between the first network unit and the second network unit via the satellite.
26. A communication arrangement according to claim 14, **characterized** in that the information transfer is compliant with at least one of the following communication specifications: GSM, PCN, PCS, HSCSD, GPRS, EDGE, CDMA, WCDMA, Bluetooth, UMTS, Teldesic, Iridium, Inmarsat and WLAN.

27. A communication arrangement according to claim 14, **characterized** in that the first network unit is a base transceiver station and the second network unit is a base station controller.
28. A communication arrangement according to claim 14, **characterized** in that
5 it comprises a wireless network inside the vehicle for wireless connection between a mobile terminal and the first network device.
29. A first network unit arrangement, the first network unit comprising means for communicating information with a second network unit, **characterised** in that the arrangement comprises means for emulating signalling of the second network unit
10 for the first network unit during periods when there is no communication between the first network unit and the second network unit.
30. A first network unit arrangement according to claim 29, **characterized** in that said signalling is LAPD link and Abis signalling.
31. A first network unit arrangement according to claim 29, **characterised** in
15 that the arrangement comprises means for communicating with the second network unit via satellite link.
32. A first network unit arrangement according to claim 29, **characterised** in that the first network unit is a base transceiver station and the second network unit is a base station controller.
- 20 33. A first network unit arrangement according to claim 29, **characterized** in said means for emulating are arranged to reserve capacity during the on state of the satellite connection dynamically for the Abis link, based on the data transfer requirement.
34. A first network unit arrangement according to claim 29, **characterized** in
25 that it is located in a moving vehicle, such as aircraft.
35. A first network unit arrangement according to claim 34, **characterized** in that it comprises:
- means for receiving communication information on another satellite and another second network unit,

- means for establishing communications between the first network unit and the other second network unit via the other satellite on the basis of the received communication information, and

5 - means for releasing the communication between the first network unit and the second network unit via the satellite.

36. A first network unit arrangement according to claim 34, **characterized** in that the vehicle is an aircraft that the first network unit arrangement comprises means for receiving flight status information from the aircraft for controlling the first network unit.

10 37. A first network unit arrangement according to claim 36, **characterized** in that the arrangement comprises means for barring communications between the first network unit and mobile stations inside the aircraft on the basis of the received flight status information, and means for keeping the mobile stations camped to the first network unit during the barred state.

15 38. A communication arrangement according to claim 36, **characterized** in that the flight status information comprises at least one of the following information: flight altitude, position and heading, doors open/closed, activate/deactivate mobile communications.

20 39. A first network unit arrangement according to claim 29, **characterised** in that the first network unit is a base station controller and the second network unit is a base transceiver station.